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**WORK ENVIRONMENT, JOB ATTITUDE, AND
JOB PERFORMANCE RELATIONSHIPS IN
OUTPATIENT HEALTH CARE CLINICS:
I. FACILITY AND POSITION DIFFERENCES**

M. C. BUTLER & A. P. JONES

REPORT NO. 80-35

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Work Environment, Job Attitude, and Job Performance
Relationships in Outpatient Health Care Clinics

I. Facility and Position Differences,

(10)

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Summary

The current study sought to identify conditions that enhanced or detracted from job performance within military branch clinics. The sample consisted of 184 persons assigned to five branch clinics under the administrative jurisdiction of a large Naval Regional Medical Center. These clinics provided outpatient and primary care services to active and retired military personnel and their dependents and additionally served as screening agencies for the larger medical center. Two facilities served recruit populations, two served a predominantly dependent or retired population, and one served nonrecruit, active duty personnel.

The data presented in this report were based on responses to a questionnaire designed to address three major areas: (a) work environment characteristics, (b) job attitudes, and (c) job performance. These measures were developed in earlier studies of naval and civilian personnel and were adapted as required to address specific needs or problems faced by branch clinic personnel. A high degree of similarity in work environment perceptions and individual job attitudes was found among the five clinics. Supervisor ratings of performance, however, showed significant variation among the different facilities. In none of the facilities was there evidence of inferior performance for the facility as a whole. Analyses by job and sex category suggested that male workers involved in direct patient care were most likely to report negative characteristics in the work environment. This group also received lower performance ratings primarily in the area of compliance with administrative and clerical requirements. Nonmedically assigned females, in contrast, reported generally positive scores on work environment and job attitude measures, and were seen by supervisors as performing in an effective manner. A probable reason for these differences lay in the influences of patient composition and workload inherent in different outpatient settings and the likelihood that medical job categories were at greatest risk for underutilization or improper matching of jobs to individual needs and abilities.

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Work Environment, Job Attitude, and Job Performance

Relationships in Outpatient Health Care Clinics:

I. Facility and Position Differences

Abstract

Perceptions of the work environment were related to job attitudes and performance measures for personnel assigned to five outpatient health care clinics as part of a multistage, systematic investigation of organizational factors and practices that influence the delivery of health care. Specifically, the report presents (a) facility by facility comparisons and (b) differences due to the type of job (medical versus non-medical) and sex of the health care provider. Specifically, the report presents (a) facility by facility comparisons and (b) differences due to the type of job (medical versus non-medical) and sex of the health care provider. Implications for health care delivery are discussed.

The rapidly rising cost of health care in the United States has stimulated considerable interest in health care delivery systems and factors which affect their functioning (Butler & Jones, 1980). Previous investigators have addressed such diverse areas as economic and cost-related factors (Report of the Military Health Care Study, 1975; Whipple, 1977), social psychological issues (Ben-Sira, 1976; Tessler, Mechanic, & Dimond, 1976), and general organizational functioning (Georgopoulos, 1975). These efforts have identified a number of common problems in the delivery of health care. For example, Georgopoulos and his colleagues (Georgopoulos & Mann, 1962; Georgopoulos & Matejko, 1967) noted that hospitals tend to be especially susceptible to certain basic organizational weaknesses, including a low level of social integration, ineffective organizational adaptation to the external environment, and poor allocation of available human resources. Such weaknesses detracted from the quality of care provided and tended to have adverse effects on organizational coordination as well as the utilization of services. These authors further argued that careful attention must be paid to such variables as hospital structure, organizational coordination as well as the utilization of services. These authors further argued that careful attention must be paid to such variables as hospital structure, organizational and staff goals, availability of resources, internal coordination, social-innovative integration, system strain, and organizational adaptation as major influences upon the hospital's effectiveness as an organization and ultimately the quality of patient care.

Georgopoulos was not alone in exploring the influences of organizational characteristics upon the delivery of health care. Perrow (1960) investigated relationships between social condition in the hospital and the adoption of organizational goals. He concluded that the hospital's goals reflected such factors as the social structure, leadership patterns, and the work environment as perceived by hospital employees.

Unfortunately, the majority of previous studies directed toward understanding the hospital as a functioning organization suffered from certain critical shortcomings. First, many investigations lacked a sound, theoretical basis for evaluating results and interpreting observed relationships (Wolinsky, 1976). Second, many studies dealt with only a few independent variables or were generalizable only to restricted segments of patient and provider populations (Greenlich, Hurtado, Pope, Saward, & Yoshioka, 1968). Finally, investigators generally have failed to consider the complexities of health care systems or have concentrated solely on long-term indicators of hospital effectiveness such as mortality rates or post-hospitalization adjustment without adequate attention to

shorter-term or intermediate outcomes (Albrecht & Higgins, 1977). Examples of shorter-term outcomes of interest include patient satisfaction and compliance with treatment regimens, physician turnover, staff attitudes, and staff performance.

Major advantages of studying intermediate relationships lie not only in the potential for building a larger body of knowledge and theory regarding the functioning of health care delivery systems but, more important, in providing sensitive, short-term indicators that may be used for policy and planning purposes (Shortell, Richardson, LoGerfo, Diehr, Weaver, & Green, 1977). A better understanding of such intermediate relationships and outcomes would assist health care managers in monitoring progress toward long term goals or predicting the needs of particular programs.

To gain such insight into the health care delivery process requires systematic and programatic efforts; no single investigation can develop and test a sufficiently general theory of health care delivery or utilization. Thus, the current study sought to identify conditions within the clinic that enhanced or detracted from actual job performance. The study focused on relationships between perceptions of the work environment, job attitudes, and performance because past research has shown such measures to have the most immediate impact on individual behavior (James & Jones, 1976; Jones & Butler, 1980; Jones & James, 1979).

Method

Sample

The sample consisted of 184 persons assigned to five branch clinics within the administrative jurisdiction of a large Naval Regional Medical Center. These clinics represented five of the eight branch clinic facilities in the region and provide outpatient and primary care services to active and retired military personnel and their dependents. They additionally serve as screening agencies for the larger medical center. The average number of patients seen per month by each of the five clinics ranged from 4,800 to 15,000 patients. In terms of the primary patient populations served, two facilities served recruits, two served a predominantly dependent or retired population, and one served active duty personnel. Referrals to inpatient facilities echoed the above differences in the nature of the patients seen. The percentage of patients referred to the Naval Regional Medical Center for inpatient admission ranged from less than 2% at the recruit facilities to approximately 20% at the facility seeing the greatest number of retired and dependent patients.

The 184 respondents represented 69% of the available personnel at the five clinics. Overall, 89% of the participants were military, 61% were assigned to medical billets (i.e., providing direct patient care) and 70% were male. The majority of personnel participating in the study (70.7%) were rated Hospital Corpsmen. The average pay grade for the 184 participants was between E-4 and E-5.¹ Table 1 describes the total sample by service (military-civilian), job (medical-nonmedical), sex, and pay grade categories. Due to the small number of civilians included in this sample, a military-civilian distinction was not maintained in subsequent analyses. (See Table 1)

Questionnaire Administration

The data presented in the report are based on responses to a questionnaire designed to address three major areas: (I) Work Environment Characteristics (143 items), (II) Job Attitudes (47 items), and (III) Job performance (21 items). Each major section included measures of several specific areas. Among the work environment measures, for example, were assessments of communication, work strain, and leadership. Included in the job attitudes section were job involvement, perceived task importance, satisfaction, and the individual's anticipated retention decision. Finally, the job performance section included specific supervisor ratings of willingness to put in extra time and effort, carelessness, effectiveness of emergency medical behavior skills, positive patient-related attitudes,

nonprofessional demeanor, and a single item assessing the quality of the individual's overall behavior. Definitions of each major variable category and the distribution of items within category are provided in Table 2. The measures included in this study were developed in previous investigations of naval and civilian personnel (Jones & James, 1979) and were adapted as required to address specific needs or problems faced by branch clinic personnel. (See Table 2)

Table 1

Frequency and Percentage Distributions of Branch Clinic
Personnel by Service and Job Status Category, Sex, and Pay Grade

<u>S E R V I C E S T A T U S C A T E G O R Y</u>						
<u>Pay Grade</u>	<u>Military</u>		<u>Civilian</u>		<u>Total</u>	
	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>	<u>N</u>	<u>Percent</u>
E-1 - E-3	48	29.3	1	5.0	49	26.6
E-4 - E-6	104	63.4	18	90.0	122	66.3
E-7 - E-9	12	7.3	1	5.0	13	7.1
Total	164	100.0	20	100.0	184	100.0
<u>Job Status</u>						
Medical	180	65.9	5	25.0	113	61.4
Nonmedical	56	34.1	15	75.0	71	38.6
Total	164	100.0	20	100.0	184	100.0
<u>Sex</u>						
Male	125	76.2	3	15.0	128	70.0
Female	39	23.8	17	85.0	56	30.0
Total	164	100.0	20	100.0	184	100.0

Table 2

Definitions of Major Variable Categories

- I. Work environment Measures (143 items)
 - A. Communication (12 items): The amount of communication of a regulative, innovative, integrative, or informative nature that exists within the work environment, seen as emanating from supervisor, subordinate, or self-initiated sources.
 - B. Work Strain (32 items): The extent to which task demands, individual roles, or conflict within the organization produce strain within the individual. Specific measures included role ambiguity, role conflict, organizational conflict, and job pressure.
 - C. Job Enlargement (22 items): The degree to which aspects of one's job are seen as possessing certain desirable features. Specifically, such aspects as job autonomy, job variety, job importance, and job challenge were assessed.
 - D. Workgroup Characteristics (13 items): The degree to which high levels of cooperation, friendliness, and pride exist within a particular workgroup.
 - E. Organizational Characteristics (17 items): The degree to which the organization itself is seen as (a)

Table 2 (Cont'd)

fostering expression of ideas, criticism, and other upward information, (b) aware of subordinate problems and needs, and (c) supports both professional and organizational pride. Measures included Openness of Expression, Upper Level Awareness, Professional Esprit, and Organizational Esprit.

- F. Leadership-Structure (22 items): The extent to which the leader emphasizes the structural and task dimensions of work. Measures included Goal Emphasis, Interaction Facilitation, Work Facilitation, and Upward Interaction.
- G. Leadership-Consideration (21 items): The extent to which the leader emphasizes interpersonal aspects of work. Specific measures included Leader Influence, Psychological Influence, Confidence and Trust-Up, and Confidence and Trust-Down.

II. Job Attitudes (47 items)

- A. Task Importance (22 items): The extent to which individual performance in a variety of behaviorally based tasks contributes to the overall provision of health care in the facility. Four specific areas were assessed, including (a) Patient-Related Administrative Behavior, (b) Direct Patient Care, (c) Patient Relationships, and (d) General Administrative Behavior.
- B. Job Involvement (6 items): The degree to which an individual is psychologically identified with his or her work.
- C. Satisfaction (22 items): The level or amount of satisfaction the individual derives from the work they do, their leader, opportunities for growth, training, and advancement, and from the Navy itself.
- D. Intent to Reenlist (1 item): A single item which assessed, on a five-point scale, a person's current reenlistment intentions.

III. Job Performance (21 items)

- A. Extra Effort (6 items): The likelihood that an individual worker could be expected to put in additional time and effort to meet work goals for either themselves or others.
- B. Carelessness (4 items): The degree to which a person could be expected to make careless mistakes in the normal performance of work duties, especially in the areas of administrative report writing and record keeping.
- C. Effective Emergency Medical Behavior (3 items): The degree to which a person could be expected to perform in a satisfactory fashion in an emergency medical situation.
- D. Positive Patient Attitude (3 items): The likelihood that an individual worker could be expected to evidence a warm, understanding, and generally favorable attitude when discussing or otherwise dealing with patients directly.
- E. Non-Professional Demeanor (4 items): The tendency in an individual to engage in non-professional or unethical behavior, such as openly discussing a patient's medical problem in front of other patients.
- F. Overall Performance (1 item): The likelihood that overall, or in general, an employee would perform in a positive, constructive, and energetic fashion. A five-point scale ranging from "unsatisfactory" to "stands out from virtually all others."

Questionnaires were administered on a voluntary basis in group sessions. To insure individual privacy, all questionnaires were coded to remove identifying information and results were reported only in terms of accumulated responses. These procedures were explained fully to all participants to increase participation and to promote frankness and openness in responding.

Analysis

Analysis of the data proceeded in two distinct stages. First, analysis of variance techniques were used to assess between-facility differences on the work environment, job attitude, and job performance measures. Second, multiple discriminant analysis (MDA) was used to explore influences of position variables such as job category (medical vs. nonmedical) or sex of the job incumbent on work environment, job attitude, and job performance measures. This technique produces weighted combinations of variables (discriminant functions) that reflect maximum differences between designated groups. In addition to providing an overall test of significance, discriminant functions simplify interpretation because the weights associated with each variable reflect that variable's relative contribution to discrimination by indicating the degree of dependence among the variables themselves. In the current study, however, the discriminant weights for some variables may underestimate the full extent of their contribution to between-groups discrimination because variables from different conceptual domains were combined in a single analysis. Thus, the weights themselves should be interpreted with appropriate caution and with an eye toward the univariate tests of mean differences on particular variables (Spector, 1977).

Results

Facility Comparisons

Table 3 contains means and standard deviations for all measures, presented separately for each facility and for the total sample. Comparisons of work environment and job attitude measures produced no significant differences between facilities. On several of the performance measures, however, differences among facilities were noted. Overall Performance, for example, varied across facilities ($F(4, 179) = 2.71, p < .05$). Personnel assigned to facilities A and D were evaluated as "superior to most," while personnel assigned to facilities B, C, and E were evaluated as "typical of most" individuals. These results were further supported by anecdotal evidence obtained from superiors and other medical center personnel who consistently mentioned the two highest rated clinics as providing excellent quality care to a large number of patients. The effectiveness and smoothness in the operation of these clinics also received frequent comment. Finally, these two facilities were less affected by personnel problems than other clinics in the region. Thus, the observed performance differences appeared to reflect valid distinctions rather than differences in rater leniency. (See Table 3)

The level of Carelessness also varied significantly between clinics ($F(4, 179) = 3.18, p < .025$), with facility A showing the lowest average score, facilities B and D appearing somewhat similar (with a mid-range score), and facilities C and E showing the highest levels of rated carelessness. However, because this measure largely reflected carelessness in clerical and administrative behaviors, such differences may simply reflect variations in the priorities set by different clinics in response to differing patient loads. Unfortunately, this latter explanation was weakened by parallel differences in Effective Emergency Medical Behavior ($F(4, 179) = 2.52, p < .05$). Briefly, personnel at facility A were evaluated as possessing higher emergency medical skill levels, while personnel assigned to facilities B, D, and E clustered together at a mid-range skill level. Facility C personnel were evaluated at lower, less effective levels. Thus, there appeared to be differences in both skill and effort that reflected more than differences in priority setting (e.g., facility A showed both the lowest level of Carelessness and highest level of Effective Emergency Medical Behaviors while facility C was at the opposite end of these dimensions).

Job Category and Sex Differences

Multiple discriminant analysis was also used to explore influences of job category and sex of the health care provider on work environment, job attitude, and performance measures. To assess the possibility of interactions

TABLE 3
Means and Standard Deviations for All Work Environment, Job
Attitude, and Performance Measures Presented by Facility

Measures	F A C I L I T Y											
	A		B		C		D		E		Total Sample	
	(n = 22)		(n = 17)		(n = 68)		(n = 22)		(n = 55)		(n = 184)	
	Mean	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
<u>Work Environment</u>												
Communication	36.14	8.01	38.76	10.80	35.22	7.22	36.82	8.37	34.87	8.04	35.74	8.07
Work Strain	91.05	14.89	81.41	16.12	93.60	18.38	92.45	21.96	100.35	16.38	94.97	18.00
Job Enlargement	80.09	12.81	84.24	12.47	75.78	13.88	75.59	17.95	77.00	13.65	77.42	14.20
Workgroup Characteristics	48.45	8.72	46.59	8.97	43.87	9.79	44.50	8.65	43.36	7.20	44.59	8.81
Organizational Characteristics	49.05	12.39	49.12	12.91	50.60	11.91	52.68	12.42	48.56	10.76	49.92	11.74
Leadership - Structure	74.91	12.84	76.35	16.75	72.37	14.11	73.64	12.82	69.25	16.06	72.26	14.72
Leadership - Consideration	77.36	13.34	79.29	13.03	74.13	14.15	74.32	15.45	72.71	14.28	74.59	14.15
<u>Job Attitude</u>												
Task Importance	69.27	19.43	78.18	14.06	76.15	21.60	64.09	25.27	75.40	21.43	73.85	22.18
Job Involvement	17.23	4.75	16.00	5.41	16.97	4.47	15.73	4.62	17.16	4.92	16.82	4.72
Satisfaction	69.45	12.85	73.00	12.58	71.01	11.95	70.14	14.96	70.56	11.24	70.77	12.20
Intent to Reenlist	2.35	1.29	3.27	1.17	2.97	1.19	2.76	1.44	2.83	1.33	2.86	1.28
<u>Performance</u>												
Extra Effort	24.45	5.48	22.71	4.34	21.01	5.18	22.82	5.33	21.96	5.02	22.08	5.18
Carelessness	6.36	2.59	7.24	2.22	8.81	3.03	7.91	3.28	8.20	3.20	8.08	3.07
Effective Emergency Medical Behavior	12.22	1.85	11.94	2.59	10.76	2.30	11.48	1.99	11.44	1.99	11.33	2.19
Positive Patient Attitude	12.36	2.30	12.35	2.21	11.56	2.09	11.89	2.12	11.27	2.09	11.68	2.14
Nonprofessional Demeanor	7.14	2.66	6.35	2.00	7.96	2.43	6.91	3.12	7.87	2.85	7.56	2.67
Overall Performance	4.18	.85	3.65	1.06	3.59	1.04	4.18	.96	3.37	.94	3.76	1.00

between job and sex, four groups were created: (a) Medical Male ($n = 86$), (b) Medical Female ($n = 27$), (c) Non-medical Male ($n = 42$), and (d) Nonmedical Female ($n = 20$). More detailed information regarding separate job and sex category analyses is presented in Appendix A.

Three discriminant functions were produced in this analysis (the number of functions equals $K-1$ groups of $M-1$ variables, whichever is smaller). Two were statistically significant ($\chi^2(51) = 114.32$, $p < .001$ and $\chi^2(32) = 46.24$, $p < .05$, respectively). (See Table 4)

Overall, the variables which evidenced between-groups discrimination included Communication ($p < .01$), Work Strain ($p < .01$), Leadership-Consideration ($p < .05$), Carelessness ($p < .01$), Effective Emergency Medical Behavior ($p < .01$), Positive Patient Attitude ($p < .05$), Non-Professional Demeanor ($p < .01$), and Overall Behavior ($p < .05$). These differences are somewhat clearer when interpreted in light of the standardized discriminant function coefficients shown in Table 4. When these latter values are considered, it appeared that the first discriminant function, which accounted for 33% of the variability between the four groups, was principally defined by: (a) Task Importance (discriminant weight of .55), (b) Carelessness (discriminant weight of .61), (c) Communication (discriminant weight of .43), and (d) Work Strain (discriminant weight of .36). Further, inspection of canonical variate

TABLE 4

Standardized Discriminant Function Coefficients, Means, Standard Deviations, and
Discriminant F-tests for Job and Sex Groups, Work Environment, Job Attitude, and Job Performance Measures

Measures	Standardized Discriminant Function Coefficients		J O B a n d S E X G R O U P S								F ^a
	I	II	Medical Male		Medical Female		Non- medical Male		Non- medical Female		
			MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
<u>Work Environment</u>											
Communication	.43	-.40	35.92	7.72	36.11	6.99	38.14	7.22	31.41	9.72	4.27**
Work Strain	.36	-.30	99.15	18.66	94.00	14.92	93.43	16.72	85.72	17.24	4.47**
Job Enlargement	-.34	-.46	75.62	14.67	76.44	10.35	79.79	15.83	80.24	13.03	1.28
Work Characteristics	.24	.11	43.62	9.69	45.19	6.09	45.38	8.90	45.79	8.13	< 1.00
Organizational Characteristics	-.10	-.15	48.37	11.93	52.48	11.28	49.88	11.57	52.17	11.62	1.29
Leadership - Structure	-.11	.02	71.09	15.76	72.63	15.38	75.24	12.95	71.07	13.33	< 1.00
Leadership - Con- sideration	.29	-.66	71.66	15.32	74.59	14.27	78.79	12.14	77.21	11.47	2.87*
<u>Job Attitudes</u>											
Task Importance	.55	.40	81.31	15.68	75.30	17.49	68.02	24.45	58.79	29.16	9.99**
Satisfaction	-.26	.50	68.78	13.22	74.33	8.42	70.14	12.15	74.28	11.06	2.42
Job Involvement	-.03	.44	16.78	4.99	18.70	4.50	15.60	4.31	16.97	4.31	2.44
Intent to Reenlist	.26	.09	2.79	1.27	3.25	1.06	2.83	1.61	2.73	.93	1.02
<u>Job Performance</u>											
Extra Effort	.14	.16	21.17	4.85	22.85	4.05	23.00	5.81	22.72	5.89	1.68
Carelessness	.61	-.06	9.21	3.33	7.48	1.95	7.67	2.76	5.90	1.95	10.86**
Effective Emergency Medical Behavior	.23	-.54	10.93	1.98	11.78	2.17	12.17	1.91	10.91	2.79	3.91*
Positive Patient Attitude	.04	-.09	11.17	2.17	12.04	1.72	12.26	2.02	12.02	2.34	3.22*
Non-Professional Demeanor	.11	-.08	8.23	2.66	7.00	2.32	7.48	2.86	6.21	2.18	5.01**
Overall Behavior	.03	-.02	3.55	1.05	3.78	.64	3.90	1.08	4.17	.89	3.36*

^aDF = 3, 180

*p < .05

**p < .01

means for the first function (not shown) indicated that medical males were distinguishable from all other groups. Medical females and nonmedical males were virtually indistinguishable from each other, but were different from both the medical male and nonmedical female groups. Finally, nonmedical females clustered apart from all other groups.

These results indicated maximum discrimination between medically assigned males and nonmedically assigned females. When the univariate mean values associated with the discriminating work environment variables are examined (see Table 4), one can see that medical males reported the most adverse perceptions on variables on this function while nonmedical females reported the most positive. For example, medical males consistently reported higher levels of work strain, viewed their work as more important to clinic functioning, and were seen as more prone to carelessness. Nonmedical females, in contrast, reported the lowest level of work strain, did not indicate their work as crucial to clinic functioning, and were highly regarded by their supervisors. Such findings suggest the possibility that medical males might be somewhat underutilized regarding their clinic assignments while nonmedical females are more evenly matched in terms of individual abilities and specific job requirements. This point is discussed more fully below.

The second discriminant function accounted for an additional 17% of the between-group variability and was defined uniquely by the following variables: (a) Leadership-Consideration (discriminant weight of $-.66$) and (b) Effective Emergency Medical Behavior (discriminant weight of $-.54$). Three additional variables were also related to the definition of the second function, although their principal usefulness was seen in terms of contributions to the first function. These variables (Communication, discriminant weight of $-.40$; Work Strain, discriminant weight of $-.30$; and Task Importance, discriminant weight of $.40$) should thus be considered carefully regarding the extent of their contribution to the second function. Inspection of the canonical variate means for this function suggested that nonmedical males were distinct from all other groups, while medical males, medical females, and nonmedical females were virtually indistinguishable from each other.

Noteworthy about the second function is the clustering of medical males and both medical and nonmedical female groups. This result parallels findings reported in studies of racial differences (Jones, James, Bruni, & Sells, 1977; Moch, 1980) that many apparent race-related differences diminish when adjusted for work group assignment, individual values, and other social variables. In the current study sex differences were not observed when men and women were placed in equivalent positions (i.e., medical males and medical females in this analysis).

Discussion

The present study examined influences of work environment and certain job attitudes on the performance of lower-level health care providers in ambulatory clinic settings. Specifically, attention focused on determining differences (a) between clinic facilities and (b) due to the sex of the worker and type of job (medical versus nonmedical). These results are summarized briefly below.

Facility comparisons. A high degree of similarity in work environment perceptions and individual job attitudes were found among the five clinics. Supervisor-rated performance, however, showed significant between-facility variation, with workers in three facilities seen as "typical of most" versus two facilities whose employees were evaluated as "superior to most." In none of the participating facilities was there evidence of inferior performance for the facility as a whole.

These performance differences should be interpreted carefully. It is logical to expect, for example, that various clinics or differences in the specific beneficiary population served (i.e., dependent/retired, active duty, recruit). The large numbers of patients seen at recruit training centers, for instance, may dictate an "assemblyline" approach to the provision of primary care, with accompanying decrements in available time for learning a greater variety of health care skills. Outpatient health care delivery to a predominantly dependent/retired population, in contrast, would likely be much different in terms of such basic patient characteristics as age, sex, and presenting condition. These patient differences could provide a somewhat better opportunity to develop a greater diversity of health care skills. Patient variables thus bear watching in future studies of this type, especially insofar as they may facilitate or inhibit the development of efficient working relationships between physicians and staff.

Job and sex category differences. Analysis by job and sex category suggested that males involved in direct patient care were most likely to report negative characteristics in the work environment and to be associated with increased levels of carelessness on the job. Specifically, medical males reported intermediate levels of communication, high levels of work strain, high levels of task importance, and were rated as more careless than any of the remaining three groups. Nonmedical females in contrast, reported the lowest scores on communication, work strain and task importance, but were seen by supervisors as performing in an effective manner. These results appeared consistent with the possibility presented earlier that medical job categories were at greatest risk for underutilization and for less effective matching of jobs to individual needs and abilities. In other words,

medically trained males may be more likely to enter the clinic environment expecting greater opportunities for job challenge, autonomy, and professional growth than are actually available in specific job assignments. When introduced to the realities of everyday clinic operation (i.e., a restricted patient load and generally routine health problems), they may encounter a much narrower range of actual job opportunities perhaps leading to the disillusionment reflected by negatively perceived job characteristics. While not directly assessed by the present study, anecdotal evidence strongly supports this interpretation and points to a potentially productive area for future investigation.

In interpreting the performance differences, however, it is important to recall that the Carelessness measure primarily was concerned with administrative and/or record-keeping behaviors. As noted earlier, the demands of patient care, regardless of how disparate such demands might be from the individual's work-related expectations, may still be sufficiently burdensome to require that greater amounts of attention be devoted to patient-related rather than administrative aspects of work. Given the fact that our measure of Overall Behavior did not contribute substantially to the between group differences on this function (e.g., discriminant weight of .03) further suggests that (a) medical males are performing medically relevant aspects of work in a generally satisfactory manner and (b) neglecting certain administrative aspects of work in favor of patient care related activity likely reflects a management orientation rather than an individual's negative perceptions of job characteristics.

The second function seemed to reflect a leadership performance relationship. This was seen especially in terms of strong contributions (discriminant function weights) from leadership-consideration and effective emergency medical behavior. At first glance, such a pattern appeared somewhat confusing and difficult to interpret. Recalling, however, that nonmedical males clustered apart from all other groups on this function made interpretation somewhat more straightforward for in reviewing certain characteristics of nonmedical males (both demographic and job type), several important points emerged.

First, nonmedical males typically worked in either administrative or medical support positions which may insulate them from direct patient contact and from the work strain or other job characteristics related to patient composition and/or workload. Indeed, closer inspection revealed that the majority of the nonmedical male group were senior hospital corpsmen (E-6 and above) whose work assignments in the nonmedical setting tended to be exclusively administrative or supervisory in nature. Thus, the average level of emergency medical skill should be somewhat higher for this group because these are the most experienced personnel in the clinic. The balance of the nonmedical male group were typically very junior (E-3 or below) and were assigned to record-keeping or supply positions while awaiting more formal job assignments or school. Because of their proportionately smaller number, the fact that these more junior, nonmedical males lacked adequate time or opportunity to have acquired such emergency medical skills did not significantly lower the overall mean score. Finally, nonmedical males perceived their leaders as more considerate than did workers in any of the remaining three groups. This result likely reflects the more task-oriented nature of nonmedical, administrative work in general as well as the opportunity for fairly close supervision, feedback, and evaluation from superiors.

To summarize briefly, the job and sex category analyses distinguished medical males along a work environment dominated dimension, with medical females and nonmedical males appearing identical. Only nonmedical females appeared different when analyzed on this dimension. On a second, performance/leadership dimension, nonmedical males were distinguished from all other groups. Thus, it would appear that the meaningfulness of sex category distinctions, at least in branch clinic settings, depend to a large degree on the nature of the work, or tasks, in question. Medically assigned females may not be identical to medically assigned males regarding their work environment perceptions, but they clearly differ from nonmedical females. Similarly, when leadership/performance

considerations are paramount, women working in any capacity appeared similar to medical males; only nonmedical males were distinctive. Our results, in sum, indicated that apparent sex-related outcomes must be carefully scrutinized. Not only are such relationships more complex than first glance would suggest, but they are also likely to change over time as more women become employed in nontraditional capacities.

Conclusions and Implications

In a general sense, the very nature of the work conducted in primary care, ambulatory clinic settings creates unique training opportunities between physician and other health care providers that could result in improvements in unit (i.e., facility) effectiveness. Beyond issues related to patient load (e.g., greater load leads to higher levels of work strain, in turn creating less positive job characteristics perceptions and, perhaps, a proneness toward carelessness), training, expectations, and utilization issues must also be considered. It is logical to expect that corpsmen training creates both positive and optimistic expectations which, if not met by the challenge of initial job assignment, could quickly deteriorate. Similarly, the growing levels of skill attained by senior personnel must also be matched with growing challenge. The current data suggest that the branch clinic environment represents a potentially fertile, but somewhat underdeveloped, training situation that would help meet the needs of both levels.

More specifically, to compensate for the lack of variety and technical challenge inherent in primary care settings, physicians and senior level personnel could be called upon to institute and actively participate in the development of training programs designed to upgrade the quality of ancillary health care support. In practice, however, this is often not the case. Breslau, Wolf, and Novack (1978) reported that physicians in primary care environments tended to delegate only highly routinized and/or technical tasks to subordinates, while activities related to patient care were not delegated at all. Additionally, in smaller practice settings not unlike the branch clinics included in this study, little delegation of any type occurred. While task delegation and participative decision-making have been shown to enhance productivity (Umstot, Bell, & Mitchell, 1976), delegation of routine activities only is not likely to alter the negative pattern of job characteristics observed in the present study. Although increased involvement in patient care activities may be highly desired by many ancillary care providers, it is interesting to note that these same behaviors require the greatest expenditure of time on the part of the physician. Thus, if non-routine, patient-related tasks could be delegated on a more frequent basis to ancillary care providers the benefits might be twofold. First, a positive change in the work habits of support personnel might be expected since their work assignments would be more consistent with expectations. Second, physician providers would be more effectively utilized given the increased work time available to them as a result of the delegation of a substantial portion of their most time-consuming activity. It would, therefore, seem likely that increases in both physician and nonphysician productivity could result from well-designed, organizationally supported attempts to improve physician-staff interactions.

While it is tempting to conclude that certain aspects of individual or facility performance would benefit from more effective personnel utilization, such a relationship has neither clearly nor conclusively been demonstrated in the past. Umstot, et al. (1976), for example, reported that job enlargement measures similar to those employed in the current study were consistently related to increases in satisfaction, while other, more behaviorally oriented measures (e.g., goal-setting, participation) were related to performance. Such findings led these authors to conclude that job characteristics which evoke changes in satisfaction are generally not directly related to job performance, although indirect influences might be expected through motivation. Jones and Butler (1980) explored this latter possibility but failed to find evidence for even an indirect relationship between satisfaction and performance, finding instead that satisfaction and performance appear to be influenced by

somewhat different conditions. As they stated, "... considerable future effort is required before the role of (job satisfaction) is fully understood." (Jones & Butler, 1980, p. 27).

Similarly, anecdotal evidence exists that suggests the preparation and training provided to new hospital corpsmen during initial classroom instruction leaves numerous gaps in skill and experience when these individuals report to operational settings. Whether such training deficiencies could be associated with course curricula, poor student selection (e.g., revised admission criteria), or other problems were beyond the scope of the present study. Given the rigors, demands, and pressures of inpatient hospital environments, however, the branch clinic setting appears ideal as an initial assignment for less experienced providers due to (a) the relatively narrow range of medical problems encountered, (b) the low incidence of more serious medical problems, and (c) the opportunity to receive carefully focused on-the-job training. Thus, such initial assignments might conceivably serve as a means to continue the training of junior care providers before they encounter more difficult hospital or operational work settings.

In conclusion, it was noted earlier in this article that considerable attention has been focused in past studies on the role of the physician as an allocator of medical resources (Feldstein, 1966; Kaitaranta & Purola, 1973; Fuchs, 1974). Other studies have focused attention on relationships between physician and nonphysician providers as appropriate to the complete definition and understanding of the health care delivery process (Breslau, et al., 1978; Lawrence, DeFries, Putnam, Pickard, Cyr, & Whiteside, 1977). Fewer studies have focused on lower level, ancillary health care providers and their contribution to effective health care delivery. Similarly, studies of health care delivery, especially those concerned with physician utilization, tend to be either large scale and multivariate in their orientation or of smaller scope and quantitatively restricted in emphasis (Mechanic, 1979). If one is to adopt a truly comprehensive yet meaningful and productive approach to the study of health care systems, then several adjustments appear necessary.

First, perhaps attention should be shifted to physicians as providers and not physicians as organizers. As noted earlier, transferring responsibility for organizing work from those who administer the health care "team" to the actual incumbent providers of care would actually lead to increases in professional commitment and improved performance (cf. Breslau, et al., 1978). In military branch clinic settings, such improvement (via less delegation of routine technical tasks and a greater emphasis on improving physician staff relations and ancillary provider training) should result in improved individual performance, unit (i.e., aggregate) performance, and patient reactions to care. It might also be hypothesized that perceptions of the work environment and job satisfaction would also improve, jointly contributing to more favorable retention situations.

Second, smaller, more discrete multivariate studies seem to be required to begin to successfully unravel the complexities of the health care delivery process. By proceeding in such a manner, investigators would likely avoid repeating the mistakes discussed by Mechanic (1979) and be in a better position to evaluate objectively the full impact (including the next logical step) of particular studies. The essence of the systems approach is a logically conceived, empirically supported, programmatic effort directed toward some ultimate goal. By examining health care systems in such a fashion it is hoped that better understanding will be gained.

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Footnote

¹Military pay grade equivalency for civilian personnel was determined by interviewing Administrative Officers at each facility to establish the comparable military level necessary to perform the duties of the position in question.

Appendix A

Multiple Discriminant Analysis of Job Category and Sex Difference Variables

Job Category

The results of the medical versus nonmedical comparisons are summarized in Table 1. A single significant discriminant function was obtained ($\chi^2 (17) = 48.20, p < .001$). The estimate of power (ω^2) for this function was .24. (See Table 1)

Several differences were noted between clinic personnel assigned to medical versus nonmedical positions. Overall, medical personnel reported (a) feelings that individual work efforts and task areas were more important to the total functioning of the clinic ($p < .01$), but also reported (b) greater levels of work strain ($p < .01$), (c) less job enlargement ($p < .05$), and (d) less consideration from their leaders ($p < .01$). No differences were found between groups regarding either job satisfaction or intent to remain in the organization.

Medical personnel were also seen by their supervisors as (a) less willing to put in extra effort to get the job done ($p < .05$), (b) more prone to make careless mistakes ($p < .01$), (c) having less favorable attitudes toward patients in general ($p < .01$), and (d) more prone to evidence an unacceptable level of professional behavior ($p < .01$). This pattern of relatively poorer performance among medical personnel was also seen in terms of Overall Behavior, where medically assigned personnel were seen as "typical of most" workers while their medical counterparts were evaluated as "superior to most" ($p < .01$).

These differences are made somewhat clearer when interpreted in light of the standardized discriminant function coefficients shown in Table 4. When these values are considered, it can be seen that most of the between-group differences rested in the job enlargement (discriminant weight of .61), task importance (-.64), and carelessness (-.44) measures alone. In general, these differences point to other than patient composition of workload factors in explaining differences in job performance. For example, the lower level of job enlargement

APPENDIX A

TABLE 1

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS, MEANS, STANDARD DEVIATIONS, AND
UNIVARIATE E-TESTS FOR MEDICAL VERSUS NON-MEDICAL PROVIDER WORK ENVIRONMENT,
JOB ATTITUDE, AND JOB PERFORMANCE MEASURES

MEASURES	STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS	JOB STATUS CATEGORY				F _A
		MEDICAL (N = 113)		NON-MEDICAL (N = 71)		
		MEAN	S.D.	MEAN	S.D.	
I. <u>WORK ENVIRONMENT</u>						
1. COMMUNICATION	-.10	35.96	7.52	35.39	8.91	<1.00
2. WORK STRAIN	-.13	97.92	17.91	90.28	17.24	8.16**
3. JOB ENLARGEMENT	.61	75.81	13.72	79.97	14.66	3.80*
4. WORK CHARACTERISTICS	-.25	43.99	8.96	45.55	8.53	1.37
5. ORGANIZATIONAL CHARACTERISTICS	.16	49.35	11.86	50.82	11.56	<1.00
6. LEADERSHIP - STRUCTURE	.07	71.46	15.62	73.54	13.17	<1.00
7. LEADERSHIP - CONSIDERATION	.19	72.36	15.07	78.14	11.81	7.53**
III. <u>JOB ATTITUDE</u>						
1. TASK IMPORTANCE	-.64	79.88	16.26	64.25	26.67	24.40**
2. SATISFACTION	-.18	70.11	12.44	71.83	11.82	<1.00
3. JOB INVOLVEMENT	-.29	17.24	4.92	16.15	4.33	2.31
4. INTENT TO REENLIST	-.28	2.90	1.23	2.79	1.36	<1.00
III. <u>JOB PERFORMANCE</u>						
1. EXTRA EFFORT	-.19	21.58	4.71	22.89	5.80	2.82*
2. CARELESSNESS	-.44	8.80	3.14	6.94	2.60	17.26**
3. EFFECTIVE EMERGENCY MEDICAL BEHAVIOR	.11	11.13	2.05	11.65	2.38	2.50
4. POSITIVE PATIENT ATTITUDE	.05	11.38	2.10	12.16	2.15	5.94**
5. NON-PROFESSIONAL Demeanor	-.05	7.94	2.62	6.96	2.66	6.03**
6. OVERALL BEHAVIOR	-.04	3.60	.97	4.01	1.01	7.66**

^Adf = 1, 182

*p < .05, **p < .01

reported by medical workers suggests that they are not being utilized to the fullest extent possible. If such is the case, it is not surprising that this group might be less motivated (lower Extra Effort scores) and prone to Carelessness. Somewhat paradoxically, however, no job satisfaction differences were found which would have been consistent with the above-mentioned pattern.

Sex Differences

Male-female differences are summarized in Table 2. The discriminant function produced in this analysis was significant ($\chi^2 (17) = 47.07, p < .001$) and accounted for approximately 24% of the between-group differences. Generally speaking, males perceived more communication present in their work environments ($p < .05$, discriminant weight of $-.44$), experienced greater levels of work strain, ($p < .01$), discriminant weight of $-.31$), felt their work to be of greater importance to clinic functioning ($p < .01$, discriminant weight of $-.43$), were less satisfied with their jobs ($p < .01$, discriminant weight of $.65$), and were viewed by superiors as more likely to make careless mistakes ($p < .01$, discriminant weight of $-.59$).

Summary

The foregoing results have several implications for training and effective utilization of personnel in ambulatory clinic settings. First, it is somewhat surprising that medically assigned workers perceived lower levels of job enlargement and were rated lower in job performance than their nonmedical counterparts, especially in light of their reports that their function in the clinic was extremely important to overall unit functioning. Based on the level of self-rated importance of the medical support personnel, one would have expected greater opportunities for job enlargement (especially challenge and variety) and higher levels of satisfaction. This apparent inconsistency might be partially explained, however, by potential discrepancies between the medically assigned individual's expectations and their actual duties. In other words, personnel engaged in providing direct health care may feel that they are making important, job-related contributions to clinic functioning, but may also feel that their skills are not being utilized fully or that their duties are not congruent with the expectations developed during their professional training. Although utilization problems were not addressed directly in this study, the effects are suggested by perceptions of less favorable job characteristics (i.e., lower levels of autonomy, variety, and challenge) among medically assigned clinic personnel. Given such findings, it seems likely that efforts to provide a better match between individual abilities and specific job requirements might be beneficial. For example, corpsmen working in nonpatient environments might be provided with increased opportunities for involvement in direct patient care or in training.

Finally, the work strain and job performance differences between male and female workers seem to suggest that it might be profitable to assign women to more responsible, medically related positions than is currently the case. Given expanding employment opportunities for women in general, this interpretation has diverse implications for recruitment, training, and assignment of hospital corps personnel. A closer examination of the results, however, suggests a more conservative interpretation. While the above-mentioned differences are statistically significant, one must also consider the nature of the positions currently filled by men and women before any such conclusions can be drawn. For the most part, women in this study were underrepresented in the professional or paraprofessional occupations ($\chi^2 (1) = 5.92, p < .025$). Specifically, 52% of the women were assigned to nonmedical, clerical, or other administrative positions, while only 33% of the males were assigned to similar positions. Because of this, many apparent relationships may not be valid. It is very likely that females might perceive the same levels of work strain experienced by males if they worked in directly comparable positions. In short, it might be hypothesized that as women became more integrated into traditionally male-dominated work settings, it is likely that differences in perceptions of various work environment dimensions

APPENDIX A

TABLE 2

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS, MEANS, STANDARD DEVIATIONS AND UNIVARIATE E-TESTS FOR MALE VERSUS FEMALE PROVIDER WORK ENVIRONMENT, JOB ATTITUDE, AND JOB PERFORMANCE MEASURES

MEASURES	SEX CATEGORY					
	STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS		(N = 128)		(N = 56)	
			MEAN	S.D.	MEAN	S.D.
I. WORK ENVIRONMENT						
1. COMMUNICATION	-.44		36.65	7.60	33.68	8.76
2. WORK STRAIN	-.31		97.27	18.18	89.71	16.55
3. JOB ENLARGEMENT	-.14		76.98	15.13	78.41	11.87
4. WORK CHARACTERISTICS	-.16		44.20	9.44	45.50	7.16
5. ORGANIZATIONAL CHARACTERISTICS	.06		48.87	11.79	52.32	11.35
6. LEADERSHIP - STRUCTURE	.12		72.45	14.97	71.82	14.25
7. LEADERSHIP - CONSIDERATION	-.52		74.00	14.70	75.95	12.85
II. JOB ATTITUDE						
1. TASK IMPORTANCE	-.43		76.95	19.92	66.75	25.43
2. SATISFACTION	.65		69.23	12.85	74.30	9.79
3. JOB INVOLVEMENT	.32		16.39	4.79	17.80	4.45
4. INTENT TO REENLIST	-.08		2.80	1.38	2.98	1.02
III. JOB PERFORMANCE						
1. EXTRA EFFORT	-.12		21.77	5.23	22.79	5.04
2. CARELESSNESS	-.59		8.70	3.23	6.66	2.09
3. EFFECTIVE EMERGENCY MEDICAL BEHAVIOR	-.22		11.34	2.03	11.33	2.53
4. POSITIVE PATIENT ATTITUDE	.14		11.53	2.18	12.03	2.05
5. NON-PROFESSIONAL Demeanor	-.10		7.98	2.73	6.59	2.26
6. OVERALL BEHAVIOR	.08		3.66	1.07	3.98	.80

$A_{DF} = 1, 182$

* $p < .05$, ** $p < .01$

would be reduced. The results of recent studies (Jones, et al., 1977; Moch, 1980) concerning racial differences in work environment perceptions and job satisfaction attest to such a likelihood. These researchers concluded that many apparent race-related differences diminished or disappeared when adjusted for such variables as work group assignment, individual values, and other social variables.

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